

THAT WHICH IS CLAIMED IS:

1. An integrated circuit capacitor, comprising:
an electrically insulating electrode support layer having an opening therein, on
an integrated circuit substrate;
a U-shaped lower electrode in the opening;
5 a first capacitor dielectric layer extending on an inner surface and outer
portion of the U-shaped lower electrode;
a second capacitor dielectric layer extending between the outer portion of the
U-shaped lower electrode and the first capacitor dielectric and also extending between
the outer portion of the U-shaped lower electrode and an inner sidewall of the
10 opening; and
an upper electrode on the first capacitor dielectric layer.
2. The integrated circuit capacitor of Claim 1, wherein the second
capacitor dielectric layer does not extend on the inner surface of the U-shaped lower
15 electrode.
3. The integrated circuit capacitor of Claim 1, wherein the
electrically insulating electrode support layer comprises:
a mold layer on the integrated circuit substrate; and
20 an etch stop layer on the mold layer.
4. The integrated circuit capacitor of Claim 3, wherein the mold layer
comprises silicon oxide and wherein the etch stop layer comprises at least one of
silicon nitride and/or tantalum oxide.
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5. The integrated circuit capacitor of Claim 1, wherein the first
capacitor dielectric layer extends onto the support layer.
6. The integrated circuit capacitor of Claim 1, wherein the first
30 capacitor dielectric layer comprises tantalum oxide, aluminum oxide (Al_2O_3), and/or
Hafnium Oxide (HfO_2).

7. The integrated circuit capacitor of Claim 1, wherein the second capacitor dielectric layer comprises a dielectric material that is not etched by an oxide etchant.

5 8. An integrated circuit capacitor, comprising:
an electrically insulating electrode support layer having an opening therein, on
an integrated circuit substrate;
a U-shaped lower electrode in the opening;
a first capacitor dielectric layer extending on an inner surface and outer
10 portion of the U-shaped lower electrode; and
a second capacitor dielectric layer extending between the outer portion of the
U-shaped lower electrode and the first capacitor dielectric and also extending between
the outer portion of the U-shaped lower electrode and an inner sidewall of the
opening.

15 9. An integrated circuit capacitor, comprising:
an electrically insulating electrode support layer having an opening therein, on
an integrated circuit substrate;
a U-shaped lower electrode in the opening, the U-shaped lower electrode
20 having an inner surface and outer portion; and
a capacitor dielectric layer extending on the outer portion of the U-shaped
lower electrode and also extending between the outer portion of the U-shaped lower
electrode and an inner sidewall of the opening.